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A Rational Approach to COM

JOHN R. ROBERTSON

John R. Robertson

John R. Robertson, Director, Sales Development-Micrographics Markets, Business Systems Markets Division, Kodak Office, joined the Eastman Kodak Company in March, 1955, and began his career with the Company as a sales territorial representative in Albany, New York and Philadelphia, Pennsylvania. In January, 1962 he transferred to Main Office in Electronic Product Planning and in May, 1964 he became Branch Manager in Denver, Colorado. In May, 1966 he was appointed Market Associate, Information Retrieval Markets in Rochester, New York, and in April, 1967 held the same position in the Computer Information Systems Markets. Mr. Robertson became Director, Sales Development-Information Technology Markets in February, 1968. In August, 1968, he became Director, Sales Development-Micrographics Markets.

Born in Boston, Massachusetts, Mr. Robertson graduated from Tufts University in 1955 with a B.A. degree in Business Administration. In June, 1969 he was elected a member of the Board of Directors of the National Microfilm Association, and he has been cited by the National Association of County Clerks and Recorders, and the Visual Communications Congress for significant contribution to the industry. He is a member of the Rochester Sales Executive Club and the American Management Association.

ABSTRACT

This article is an attempt to apply some order to the decision making process for those faced with the need to appraise the new COM breakthrough. For some, the advantages of COM are obvious and the rewards immediate. For a greater number of people however, the justification process is complex and uncertain. The steps outlined in this article offer the reader a reasonable road with intermediate levels for appraisal. The approach is elementary, the risks are minimal and the rewards can be satisfying.

"Better and cheaper input/output hardware: displays; upper-and lower case . . . "

"Better input/output — human interface (displays, etc.)".

"Lower-cost low-speed terminals for individual use, with extended capabilities including low-cost hard-copy . . . "

The preceding quotes were in answer to the question, "What innovations would you like to see in the computer industry"? It was one of several questions asked by Scientific American magazine on a questionnaire distributed by them to members of the Association for Computing Machinery. The results of the survey were published by Scientific American in 1968*.

It is obvious that the respondents were voicing a need for better man/machine communications and the hardware for implementation. It is quite possible that they were not completely familiar with advancements made in computer output microfilm technology (COM) in answer to a part of their dilemma. It is up to us in the microfilm industry, both user and vendor alike, to promote this new and exciting concept of data recording and storage.

INTRODUCTION

This article is intended for those who would like to utilize a COM system and follow a logical approach to investigate its potential as an answer to solving their computer output problems. Main emphasis will be placed on the microfilm aspects of COM, since 90% or more of a COM system is microfilm oriented.

Using a COM system unshackles the systems design people from the chains of mechanical printers. It allows them a whole new world of freedom in developing multi-level, user-oriented information systems. Now data can be structured in an optimum user form. Selective or exception printing becomes more feasible.

RECOGNIZING A NEED

The initial step to take is to study existing paper reports generated by the computer and determine those reports which can be more economically produced and efficiently utilized by recording on microfilm. It is not the computer environment which determines the utilization of microfilm but the use to which the report is put. The final arbiter is the user of the microfilm system, and his needs must be satisfied. This can be accomplished through the proper design of the microfilm retrieval system.

Let us look at the characteristics of various types of computer generated documents, and their applicability to microfilm.

1. Items such as paychecks, invoices, and credit memos are not prime candidates for COM film. Neither is the 500-page report that is broken into 100 five-page segments for distribution to 100 branches. But the second, third, and fourth carbons of these reports may be excellent candidates. Feasibility of recording on film may be determined by analyzing information retrieval requirements, costs of forms, decollating, bursting, binding and interfiling; and then comparing these costs to those for producing the same data via COM. As a result of this analysis you will find, in the majority of cases, that document handling and storage expense of internally used copies are substantially lower using a COM system.
2. Certain documents are known as "turn-around documents" and do not lend themselves to microfilm. These are updated usually by making hand-written notations for a period of time and then key-punching the changes from the document for re-entry into the computer. The older reports are kept for audit trail purposes.
3. Account Status reports are usually lengthy,[1] produced often, require multiple copies, and are referenced frequently. Because of these four characteristics they are candidates for film recording. Computer time and turn-around time can be saved by going to film. A large number of paper copies causes reproduction problems, which are greatly simplified or eliminated by film and at a substantially reduced cost. Finally, reference time can be shortened by the use of the proper microform, thereby saving labor dollars.
4. Publishing-type documents, such as catalogs and price lists, are good candidates for film because of their wide distribution with the associated distribution costs.
5. Management Information System summary reports, which generally include business graphs to reflect trends are an ideal area for COM. This application is virtually untapped. Due to the speed of the COM, report data can be updated overnight and the current information displayed in conference rooms with large screen microfilm display systems the very next day.
6. Security film copies listing names, financial information, personal account status, and audit trail data, are frequently the ones which may tip the scale in favor of microfilm in a justification process.

DATA RECORDING ON MICROFILM

There are generally two distinct instances when a film system may be created for the recording of any particular report.

The first occurs when an existing paper report is converted to microfilm. In this case, there is a temptation to merely use a straight-line paper conversion to film as the simplest expedient with

[1] Note: A "lengthy" document is generally considered 500 pages and over.

little or no regard to information retrieval requirements. Remembering that the user determines the success of the system, we should consider the microfilm retrieval method and individually discuss it in detail with the client.

The second, and more desirable case, incorporates the film system as an integral part of the initial overall systems design. In this case, many interesting possibilities are opened to the systems designer as he attempts to satisfy the user's needs. Let us examine a few.

1. Restraints dictated by use of a mechanical printer are eliminated. For example:
   a. The odd 11" x 14" computer page can be replaced with the more acceptable 8½" x 11" page size and format. The line of 132 characters required by old-style mechanical printers is no longer needed.
   b. The limited character set (upper case only) is supplemented in COM systems by lower case characters, special characters, and different font styles, adding new dimensions and meaning to information.
   c. The limitation of six legible paper copies is eliminated. Any number of duplicate microfilm copies, each of equal legibility, may be produced.
   d. Due to the slowness of the mechanical printer, a report is generated in one sequence and format. As a result, secondary users may be inadequately served. With a COM unit, a report can be generated in different formats for different users. This is the real sleeper in a long list of advantages for COM; and, in the long run, it may outweigh all others.
2. Restraints due to the use of paper are eliminated.
   a. Specialized preprinted forms have been a nuisance to data processing people. With forms slides for the COM, a user may obtain specialized, easier to use reports at no extra cost. The user should be aware of the need for critical registration of the forms slide image.
   b. High shipping costs of paper can be reduced to a minimum or eliminated. The low cost of distributing microfilm copies opens up the possibility of a wider dissemination of information on microfilm.
   c. Paper files are frequently difficult to reference and not convenient to use. Because of this fact, on-line display terminals are often considered to supplement paper files. Now, in many cases, film will give "on-time" retrieval with great simplicity while still providing current information.
   d. Inventory of paper stock, a costly item in itself, is dramatically reduced.

Once an application has been isolated, the economic advantage of using film proven, and microforms selected, it is time to investigate the COM in depth. Fortunately, no organization, regardless of size, needs to pass up the possibility of using a COM. There are a variety of contract alternatives offered, each with a different cost option.

MICROFILM GENERATION OPTIONS

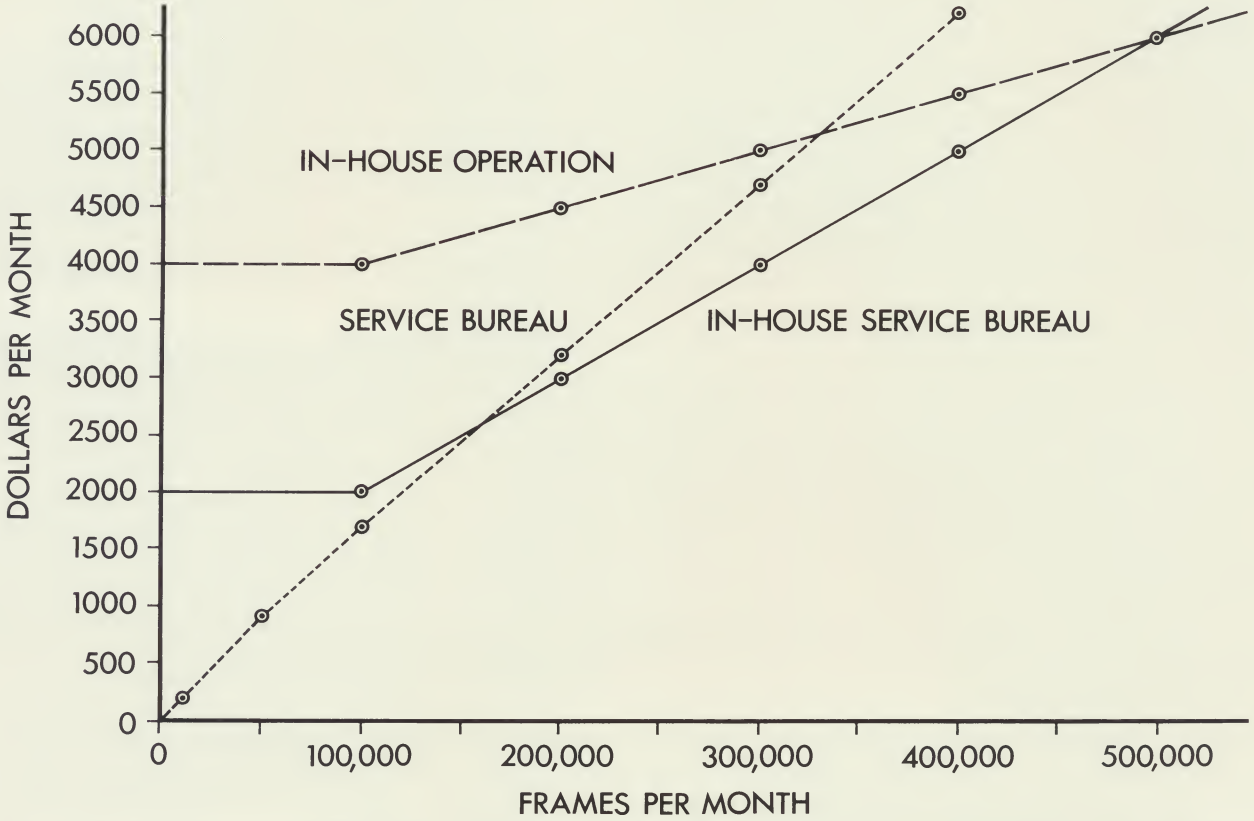
It is suggested that a two or three phase program be undertaken to implement a COM system. This approach offers an organization a number of advantages.

1. Obtain valuable experience in the use of COM technology with no capital expenditure.
2. Increase the number of applications at an orderly rate justifying each one economically.
3. Allow for growth of volume and, at a predetermined information output level, move to a less costly form of film production.

The three-phase program that permits this approach to work incorporates the following steps:

1. Use an independent service bureau to initiate a COM program. Today there are many such operations in every part of the country.
2. At a certain point, output volume at the service bureau will justify your consideration of an in-house system. However, as a transitional step, let a service bureau run the system for you within your own organization. Your control and turnaround time might be reduced slightly,

COST OF PRODUCING FILM USING VARIOUS COM ALTERNATIVES



but your costs will not be as high as a true in-house system. The service bureau can use the unit on off-hours to serve outside customers. (In some operations an arrangement of this nature may not be possible.)

3. Take over the in-house system from the service bureau when equipment costs, supply costs, and labor costs equal the price being paid to the bureau for their services. At this point, an in-house operation can be justified.

The graph illustrates the cost consideration of the three approaches. It does not attempt to represent any one particular instance, but instead shows how an organization can progress logically and systematically from one phase to the next.

In each phase certain criteria can be established to help make the proper decision concerning which vendor to select. In the case of the first phase, some of the considerations to carefully investigate before deciding upon a particular service bureau are:

1. Quality of Product — All service bureaus are capable of excellent results but consistency of output should be monitored closely. It is also important to watch the quality of film prints in relation to the original camera film.
2. Turnaround Time — Many computer reports are needed on a tight time schedule. Check the service bureau's capability to give reliable turnaround if it is necessary in your operation.
3. Systems Support — It is desirable to obtain support from the service bureau in the form of programming and job set-up. The service bureau which makes conversion to the microfilm system with ease has a real benefit to offer.
4. Price —Service bureau prices have been in decline for the past three years. Whether they have reached their lowest point would only be a matter of conjecture. But to insure a realistic price, several quotes should be obtained. In all likelihood, they will be very close and price will not be the most important factor upon which to base your contract decision.

5. Service Bureau Hardware — Since you may convert to an in-house operation, it would be beneficial, if possible to have your applications processed initially on a unit that you would likely convert to in the future. This will cut down on conversion costs later.

There are certainly other criteria which you will want to examine. A similar list of considerations can be set up for the in-house service bureau and would include the following points:

1. Experience — With the operation on your own premises and the production volume high, it will be necessary to deal with a firm on whom you can rely for consistent support.
2. Outside Contracts — The amount of outside work the service bureau plans to do and the scheduling times when this will occur should be mutually determined and agreed upon.
3. Price — Again, the contract price and the services rendered will be important factors. Such items as the training of your personnel to take over operations, the amount of test work performed at no cost, and similar considerations should be taken into account.
4. Equipment — As in the choice of a service bureau, this must be considered if you plan to take over the installation. You will want to judge the system in light of the systems support supplied by the vendor when the service bureau is no longer running the installation. The total capabilities of the system, with regard to future requirements, should be examined closely.

We have devoted all of our discussion so far to those companies which should take the stepping-stone approach to using COM. However, some companies can immediately identify sufficient applications which would warrant the installation of a COM unit without the need for the service bureau stepping stones. In these cases, especially in companies which process high-volume and high-reference applications, such a direct step can easily be justified.

As part of your investigation, I would recommend your reading the new NMA Monograph on COM, authored by Don M. Avedon, titled *Computer Output Microfilm: An NMA Survey of the Field.* It is an up-to-date investigation of this subject.

It can be said that the emerging COM technology answers many of the problems faced by the data processing community. It is basically a microfilm system which must be sold to the user on its merits as an improvement over paper, and not just as a replacement for paper. The systems designer should be brought up to date so that he can take full advantage of the possibilities of this new medium.

Virtually every organization using data processing can use COM via the service bureau, and at the same time, build expertise along with an application base. From that point, building toward an in-house installation is just a matter of time.

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National Microfilm Association
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